

**Area-Wide Soil Contamination Task Force  
Institutional Frameworks Case Studies  
Case Study Identification**

*Purpose of Institutional Frameworks Case Studies*

The purpose of the Institutional Frameworks Case Studies has been identified as the following:

- To help inform the Task Force's thinking on strategies to potentially address area-wide soil contamination in WA State by:
  - Providing an in-depth look at 3-5 other cleanup or land use development projects; and
  - Examining their legal, funding, and institutional arrangements for protective measures, education, monitoring and information maintenance, and long-term controls.

*Task Force Criteria for Selecting IF Case Studies*

At its April meeting, the Task Force identified the following general criteria for selecting Institutional Frameworks Case Studies:

- Similarity to conditions to WA (e.g., size of contaminated area, type and level of contamination)
- Range or types of
  - protective measures involved
  - funding strategies (sources and mechanisms)
  - institutions involved
  - legal frameworks
- Length of time protective measures or long-term controls have been in place
- Germane to socio-economic conditions in Washington (e.g., urban vs. rural populations)
- Extent of government involvement

*Initial List of IF Case Studies*

Based on these general criteria, three cleanup or land use development projects have been identified for Institutional Frameworks Case Studies. Below is a brief description of each.

1. Lowell, Massachusetts Brownfields Redevelopment  
The City of Lowell has identified numerous sites within its boundaries that are contaminated from historic industrial use. Soil contamination includes lead and other heavy metals, polychlorinated biphenyls, oil and organic matter. The city is a Brownfields Showcase Community and has established a community advisory council that assists the city Division of Planning and Development. As a showcase community, Lowell has utilized a wide variety of loans, grants, and other resources provided by a number of state and federal government entities (including HUD, EPA, Park Service, ATSDR, Transportation, NEIHS, Mass DEP, U Mass, state development and planning offices, and others). Lowell may be able to provide insights on the wide variety of funding sources and mechanisms used. The Massachusetts Brownfields Program also provides a unique state subsidized insurance program created for lenders and developers.

2. **Burlington County, New Jersey Agriculture Lands Development**  
Burlington County is one of many counties in the State of New Jersey with widespread development of former agricultural lands that have (or may have) low to moderate levels of pesticide contamination. Several municipalities within the county (including Burlington and Mount Laurel Townships) have established ordinances requiring soil testing and cleanup prior to development of former agricultural lands. As well, the State of New Jersey has developed guidance for homeowners providing information about pesticides and human health and guidance on potential actions (e.g., capping, vegetative cover), guidance on soil sampling, the ability to seek DEP approval of property owner investigation, and testing protocols for soil blending at historic pesticide residue sites.
3. **Bunker Hill, Idaho Superfund Site**  
This project involves cleanup of a former smelting facility and mining site. The historic mining and smelting operations have resulted in contamination of a 21-square-mile area of soil and groundwater, primarily with lead, arsenic, cadmium, and zinc. The nature and extent of soil contamination present at this site (widespread arsenic and lead soil contamination) may be similar to contamination in Washington State. The site was placed on the National Priorities List in 1983, the Record of Decision was signed in 1991, and a multi-faceted institutional controls program enforced by the Panhandle Health District has been in place since 1995. As such, the protective measures and associated programs have a demonstrated history from which lessons may be learned.

#### *Why These Projects Were Identified*

Although no single one of these projects meet all of the criteria identified by the Task Force, these three cleanup and land use development projects collectively meet the criteria and present a variety of problem types and solutions from which the Task Force may gain some valuable lessons learned. The sites represent contamination from different sources: mining / smelting, other industries, and agriculture. The sites include both urban and rural areas. The sites include a variety of governmental and private entities with varying levels of involvement. As well the sites have employed a variety of solutions to address issues of soil contamination including traditional remedial approaches, institutional controls (both governmental, such as permitting and zoning, as well as proprietary, such as deed notices and restrictions), health monitoring programs, soil sampling guidance and testing protocols, and insurance programs.

#### *Additional Projects for Potential Case Studies*

The following are additional cleanup or land use development projects for consideration as potential case studies. The May Task Force meeting will include time for the Task Force to discuss and consider these projects, and to select one or two of these or other sites/programs as additional IF Case Studies (so there are up to five total case studies).

1. **Anaconda, MT**
  - Smelter and other facilities operated in Anaconda from about 1884 to 1980
  - Arsenic is the primary contaminant of concern; other contaminants are copper, cadmium, lead, and zinc
  - Site placed on the National Priorities List (NPL) in 1983; risk assessment completed and final remedy selected for community soils in 1986; the institutional control program for the site is still being developed

- The County created a special land-use district and established a development permit system for the Superfund area
  - Community involvement/education effort, includes information packages that are being developed for developers and homeowners
2. Globeville area, Denver, CO
    - Globeville is a mixed industrial and residential area; the Globe Plant has processed various heavy metals since the 1890s and continues to operate
    - Contaminants of concern are arsenic, lead, and cadmium
    - Colorado Department of Public Health and Environment oversees the Globe area cleanup
    - Soil cleanup (removal/replacement) began in 1994; 650 residential properties and 70 acres of commercial properties have been remediated
    - Medical monitoring program available to current and former Globe area residents and workers
  3. Vasquez Boulevard/I-70 site, Denver, CO
    - Several smelters operated historically in the area from the 1870s to the 1950s; there are residential properties on the site now
    - Contaminants of concern are arsenic and lead
    - Contamination discovered through sampling done for the Globeville site
    - EPA removed soils from 18 residential properties in 1998 and added the site to the NPL in 1999
  4. Herculaneum, MO
    - Town next to the largest lead smelter in the U.S., in operation since 1890
    - Yard soil replacement is ongoing
    - Soils have been replaced at 66 residences; 27 families have temporarily relocated and had their homes cleaned (interior cleanups began in January 2002)
    - Missouri Department of Health and Human Services compiled and evaluated all known blood lead data from Herculaneum residents in 2001
    - Community involvement through Herculaneum Lead Smelter Site Community Advisory Group
    - Public outreach/education effort; individual protective measures encouraged
  5. Murray Smelter Site, Murray, UT
    - Historical lead smelting and arsenic refining at the site; lead smelter operated from 1872 to 1949; commercial development planned for the smelter site
    - Lead and arsenic soil contamination; arsenic contamination in ground water
    - Soil removal and replacement completed for 20 residences where lead levels exceeded 1200 ppm
    - Site listed on NPL in 1997; record of decision (ROD) and consent decree issued in 1998 (the Utah Department of Environmental Quality did not support the ROD or the consent decree for the site)
    - The City of Murray amended its zoning ordinance in 1989 to establish an overlay land-use district for the smelter site, where special requirements apply
  6. Trail, BC
    - Large lead/zinc smelter since 1896 (new, cleaner smelter still in operation)

- Soil lead concentrations of 700-750 ppm (other contaminants include arsenic and zinc)
  - Variety of funding sources used for protective measures
  - Protective measures rely almost entirely on exposure controls, education and health monitoring
  - Community Lead Task Force involved wide range of stakeholders
7. Verdese Carter Park, Oakland, CA
- Historic smelter site now built into a city park with residences nearby
  - Contaminant of concern was lead; sources included the smelter, paint, and nearby interstate highway
  - EPA worked with the U.S. Department of Housing and Urban Development and local agencies to coordinate efforts to reduce lead exposure
  - Soil was removed at 250 homes (removal action started in 1996 and was completed in 2000)
  - Institutional controls are in place at the site, but local agencies haven't always followed the monitoring and enforcement requirements
  - Considerable public education and outreach effort
8. Iron Mountain, near Redding, CA
- Mining site from 1860s to 1963; historically the largest point source of toxic metals in the U.S.
  - Surface water contaminated with sulfuric acid, copper, zinc, and cadmium
  - Lime neutralization process installed as emergency response to treat acid mine discharge, starting in 1988
  - The PRP, State of California, and U.S. government reached a settlement in 2000 to ensure long-term control of 95 percent of releases from Iron Mountain (using water treatment plants)
  - Settlement includes a unique funding mechanism for long-term operation and maintenance that involves a financial assurance and insurance vehicle
9. Woburn, MA
- 245-acre former industrial site, 12 miles from Boston
  - Historical chemical industrial activity, including manufacture of lead arsenate
  - NPL listing in 1983, ROD signed in 1986
  - Arsenic, lead and chromium in soils, VOCs in groundwater
  - Variety of protective measures employed (ongoing treatment and long-term controls)
  - Remedial and Custodial Trusts established to pay for remediation and long-term controls
10. Barber Orchard, Haywood County, NC
- 500-acre former apple orchard, which was divided into parcels and sold for residential development in the late 1980s
  - Lead arsenate, DDT, and other organic pesticides were used at the site
  - County and State sampling of well water revealed pesticide contamination in 1999
  - EPA completed an emergency removal action at the site in 2000; surface soils were removed at about 20 yards where soil arsenic levels exceeded 40 ppm
  - Additional cleanup and use of institutional controls being planned; site placed on the Superfund NPL in 2001

11. Home Heating Oil Pollution Liability Insurance Program, WA (heating oil tanks)

- As of 1998, both WA State and EPA require owners and operators of petroleum underground storage tanks (USTs) to demonstrate financial responsibility for corrective action and damage compensation caused by accidental leaks of petroleum
- EPA estimates 40% of USTs are leaking or have leaked
- WA State formed the Pollution Liability Insurance Agency (PLIA)
- PLIA provides:
  - UST reinsurance, making coverage affordable for small to medium sized businesses
  - Heating oil insurance for tanks with consumptive use on site, which covers homeowners and others for accidental leaks on site
  - Technical assistance and advice

The following projects located in Washington State have also been proposed for consideration as case studies. The Department of Ecology staff have offered to present on 2 or 3 of these projects (or potentially numerous other sites) as examples of how cleanup or land use development projects are currently handled in Washington State.

- Chandler House, Yakima, WA (orchard)
- Tacoma Smelter Plume, WA (smelter)
- Everett Smelter Plume, WA (smelter)
- Dupont, WA (industrial)

**Area-Wide Soil Contamination Task Force  
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Draft Content Outline**

1. Problem Description (1-2 pages)
  - a. Physical and geographical (size of area, soil / water, gradient)
  - b. Impacted populations and type (human and ecological)
  - c. Associated land uses (proposed, current, historic)
  - d. Contamination or other issue (nature and extent)
  - e. Chronology of major milestones
2. Problem Assessment (1-3 pages)
  - a. How problem was brought to light (e.g., through a real estate transaction or discovery of a health problem)
  - b. Parties/institutions involved in discovery/assessment and their roles (government entities, PLPs, landowners, others)
  - c. Results (preliminary and final results of problem assessment)
  - d. Regulatory frameworks triggered
3. Responsive Measures (3-10 pages)
  - a. Who was involved
  - b. Approaches considered
  - c. Approaches selected (all that apply) and why (e.g., rationale and/or triggers for selecting different approaches)
    - i. Education / outreach
    - ii. Technical assistance / other services
    - iii. Health monitoring
    - iv. Removal or treatment
    - v. Engineering controls (e.g., barriers, caps)
    - vi. Institutional controls (governmental, e.g., zoning, permitting, and private, e.g., covenants, easements)
    - vii. Ongoing monitoring and enforcement
    - viii. Liability protections
  - d. For each approach selected, a detailed description of:
    - i. Legal authorities
    - ii. Involved parties/institutions and roles
    - iii. Funding sources
    - iv. Funding mechanisms
4. Lessons Learned (1-3 pages)
  - a. What worked well or did not
  - b. Changes made
  - c. Replicability